

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 (currently amended) A coating composition for making a microarray comprising:

a single layer of microspheres randomly dispersed with a uniform density in a fluid on a substrate, the fluid containing a coating aid and a gelling agent, wherein the gelling agent forms an immobilizing gel, ~~wherein the gel includes a single layer of the microspheres in a random distribution such that the microspheres are evenly spread with a uniform density.~~

2 (previously presented) A coating composition according to claim 1 wherein the substrate is not premarked and does not contain microwells.

3 (previously presented) A coating composition according to claim 1 wherein the random distribution complies with a Poisson distribution.

4 (previously presented) A coating composition according to claim 1 wherein the microspheres are chemically functionalized to have surface active sites.

5 (previously presented) A coating composition according to claim 4 wherein the surface active sites carry organic or inorganic attachments.

6 (previously presented) A coating composition according to claim 4 wherein the surface active sites have organic or inorganic attachments thereon that are capable of chemical or physical interaction.

7 (previously presented) A coating composition according to claim 4 wherein the surface active sites are bioactive.

8 (previously presented) A coating composition according to claim 7 wherein each of the bioactive sites interact with a nucleic acid, protein, or fragments thereof.

9 (previously presented) A coating composition according to claim 1 wherein each of the microspheres contains a signature.

10 (original) A coating composition according to claim 9 wherein the signature is comprised of an oil-soluble dye.

11 (original) A coating composition according to claim 9 wherein the signature is interrogatable by optical, magnetic, or other electromagnetic means.

12 (original) A coating composition according to claim 1 wherein the gelling agent is gelatin.

13 (original) A coating composition according to claim 1 wherein the gelling agent undergoes thermal gelation.

14 (original) A coating composition according to claim 12 wherein the gelatin is alkali pretreated gelatin.

15 (original) A coating composition according to claim 1 wherein the microspheres have a mean diameter between 1 and 50 microns.

16 (original) A coating composition according to claim 1 wherein the microspheres have a mean diameter between 3 and 30 microns.

17 (original) A coating composition according to claim 1 wherein the microspheres have a mean diameter between 5 and 20 microns.

18 (previously presented) A coating composition according to claim 1 wherein the microspheres are in a concentration between 100 and 1 million microspheres per centimeter squared.

19 (previously presented) A coating composition according to claim 1 wherein the microspheres are in a concentration between 1000 and 200,000 microspheres per centimeter squared.

20 (previously presented) A coating composition according to claim 1 wherein the microspheres are in a concentration between 10,000 and 100,000 microspheres per centimeter squared.

21 (original) A coating composition according to claim 1 wherein the microspheres comprise a synthetic or natural polymeric material.

22 (original) A coating composition according to claim 21 wherein the polymeric material is an amorphous polymer.

23 (original) A coating composition according to claim 22 wherein the amorphous polymer is polystyrene.

24 (previously presented) A coating composition according to claim 4 wherein at least one of the surface active sites of each of the microspheres comprises a functionality independently selected from the group consisting of carboxy, amine, epoxy, hydrazine, aldehyde and combinations thereof.

25 (canceled)

26 (original) A coating composition according to claim 1 wherein the microspheres are prepared by emulsion polymerization or limited coalescence.

27 (currently amended) A microarray comprising:

a substrate coated with a composition comprising a gel containing a single layer of microspheres randomly distributed with a uniform density on the substrate ~~in a gel~~, wherein the gel comprises ~~is formed from gelation of a fluid containing a coating aid and a gelling agent, and wherein the microspheres are immobilized in a single layer at random positions on the substrate by the gel such that the microspheres are evenly spread with a uniform density on the substrate.~~

28 (original) A microarray according to claim 27 wherein the substrate is free of receptors designed to physically or chemically interact with the microspheres.

29 (cancelled)

30 (original) A microarray according to claim 27 wherein the gelling agent is gelatin.

31 (original) A microarray according to claim 27 wherein the microspheres bear chemically active sites.

32 (previously presented) A microarray according to claim 31 wherein the chemically active sites are bioactive.

33 (original) A microarray according to claim 27 wherein the substrate comprises glass, plastic, cellulose acetate, or polyethyleneterephthalate.

34 (previously presented) A microarray according to claim 27 wherein the substrate is flexible.

35-40 (canceled)

41-42 (not entered)

43 (previously presented) A microarray according to claim 27 wherein the substrate is not premarked and does not contain microwells.

44 (currently amended) A method of making a microarray, comprising the steps of:
providing a substrate; and
coating on the substrate a composition comprising a single layer of microspheres randomly distributed with a uniform density in a gel, wherein the gel is formed from gelation of a fluid containing a coating aid and a gelling agent, wherein said composition is fluid during coating and the gelling agent undergoes thermal sol-to-gel transition and immobilizes the microspheres randomly in a single layer on the substrate such that the microspheres are ~~evenly spread~~randomly distributed with a uniform density.

45 (previously presented) A method according to claim 44 wherein said sol-gel transition occurs without the coating undergoing a drying process.

46 (previously presented) A method according to claim 44 wherein the gelling agent is gelatin.

47 (cancelled)

48 (previously presented) A method according to claim 44 wherein the composition is coated on the substrate by knife coating, blade coating, or slot coating.

49 (currently amended) A method of making a microarray, comprising the steps of:
providing a substrate;
coating on the substrate a composition according to claim 1, wherein said composition is fluid during coating; and
allowing sol-to-gel transition of the gelling agent to randomly immobilize the microspheres in a single layer in the plane of the coating such that the microspheres are ~~evenly spread~~randomly dispersed with a uniform density on the substrate.

50 (canceled)

51 (canceled)